FIG. 1

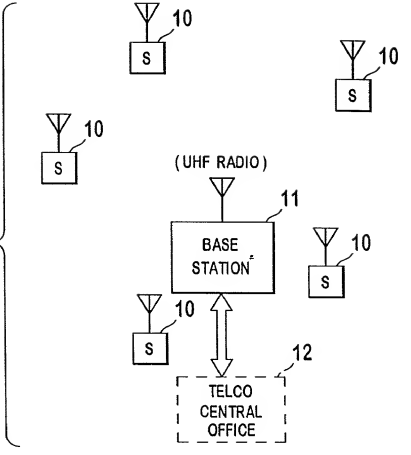
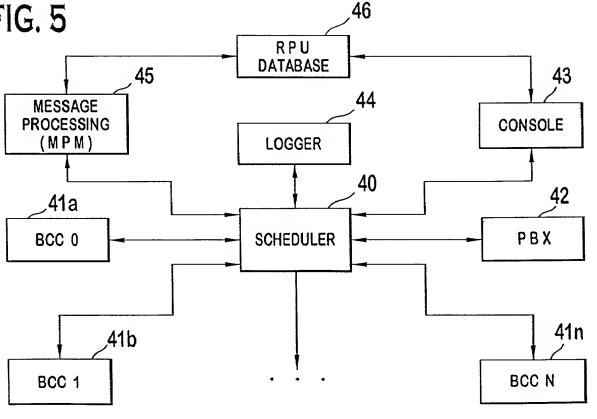

10
S
10
S
10
S
(UHF RADIO)
11
BASE STATION
10
S
10
S
12
TELCO CENTRAL OFFICE

FIG. 5


46
RPU DATABASE
45
MESSAGE PROCESSING (MPM)
44
LOGGER
43
CONSOLE
40
41a
BCC 0
SCHEDULER
42
PBX
41b
BCC 1
41n
BCC N

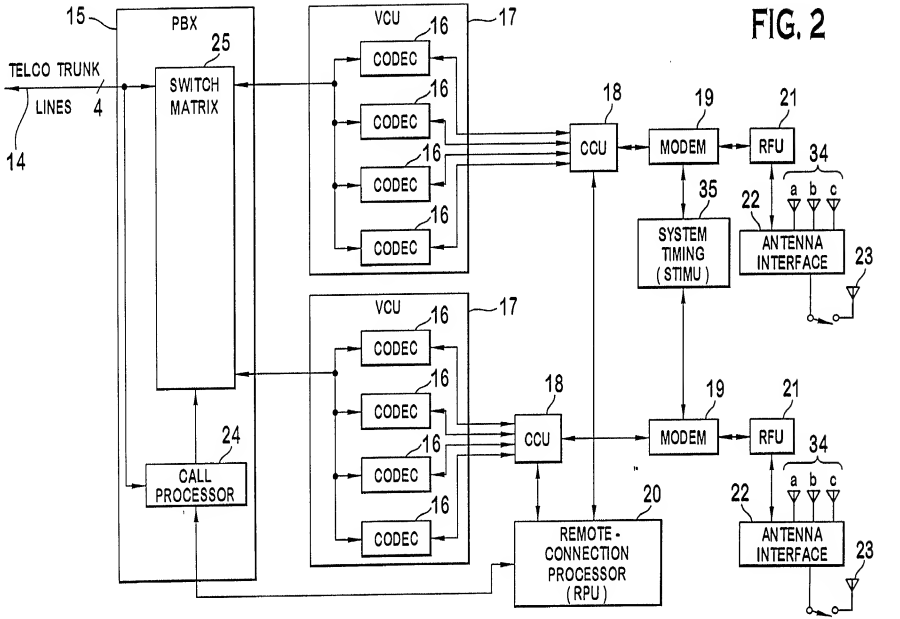

15
PBX
25
SWITCH MATRIX
TELCO TRUNK
LINES
4
14
VCU
16
17
CODEC
CODEC
CODEC
CODEC
18
CCU
19
MODEM
21
RFU
34
a
b
c
22
ANTENNA INTERFACE
23
35
SYSTEM TIMING (STIMU)
VCU
16
17
CODEC
CODEC
CODEC
CODEC
18
CCU
19
MODEM
21
RFU
34
a
b
c
22
ANTENNA INTERFACE
23
24
CALL PROCESSOR
20
REMOTE-CONNECTION PROCESSOR (RPU)

FIG. 2

FIG. 3

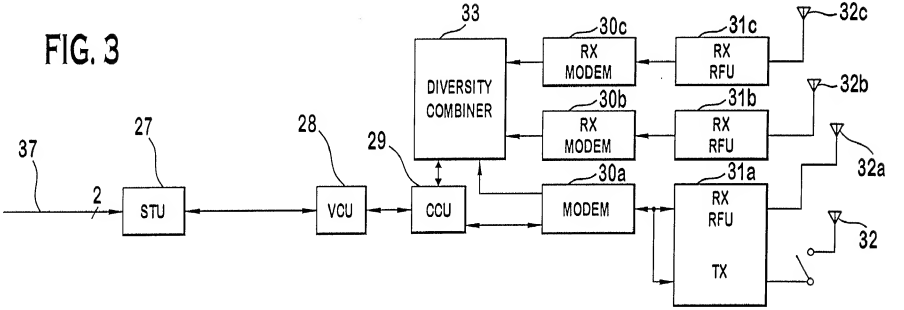

33
30c
31c
32c
RX MODEM
RX RFU
DIVERSITY COMBINER
30b
31b
32b
RX MODEM
RX RFU
37
27
28
29
32a
2
STU
VCU
CCU
30a
31a
MODEM
RX RFU
32
TX

FIG. 25

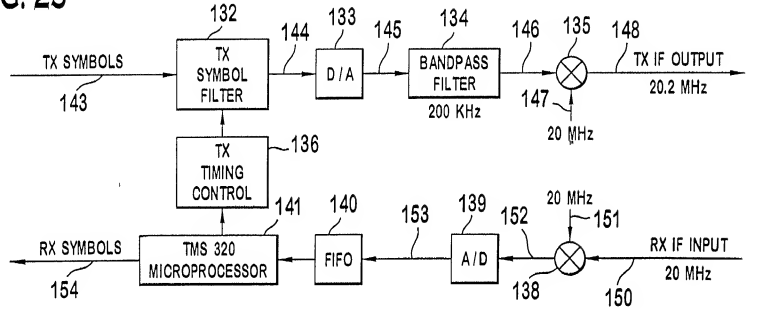
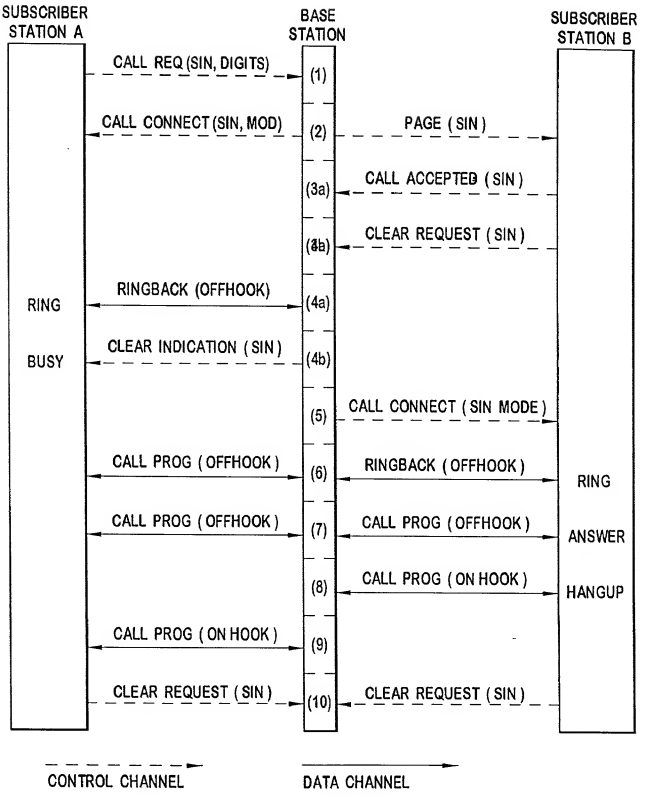

132
144
133
145
134
146
135
148
TX SYMBOLS
TX SYMBOL FILTER
D/A
BANDPASS FILTER
TX IF OUTPUT
143
200 KHz
147
20.2 MHz
20 MHz
TX TIMING CONTROL
136
141
140
153
139
20 MHz
152
151
RX SYMBOLS
TMS 320 MICROPROCESSOR
FIFO
A/D
RX IF INPUT
20 MHz
154
138
150

FIG. 4


SUBSCRIBER STATION A
BASE STATION
SUBSCRIBER STATION B
CALL REQ (SIN, DIGITS)
(1)
CALL CONNECT (SIN, MOD)
(2)
PAGE (SIN)
CALL ACCEPTED (SIN)
(3a)
CLEAR REQUEST (SIN)
(3b)
RINGBACK (OFFHOOK)
RING
(4a)
CLEAR INDICATION (SIN)
BUSY
(4b)
CALL CONNECT (SIN MODE)
(5)
CALL PROG (OFFHOOK)
(6)
RINGBACK (OFFHOOK)
RING
CALL PROG (OFFHOOK)
(7)
CALL PROG (OFFHOOK)
ANSWER
(8)
CALL PROG (ON HOOK)
HANGUP
CALL PROG (ON HOOK)
(9)
CLEAR REQUEST (SIN)
(10)
CLEAR REQUEST (SIN)
CONTROL CHANNEL
DATA CHANNEL

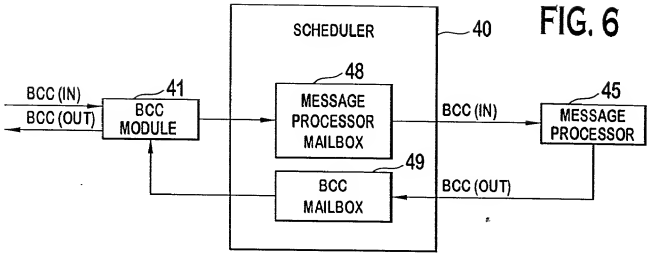


FIG. 6

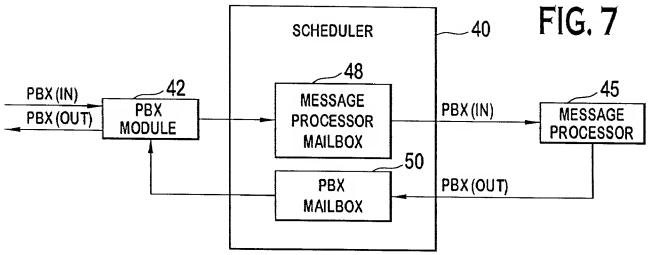


FIG. 7

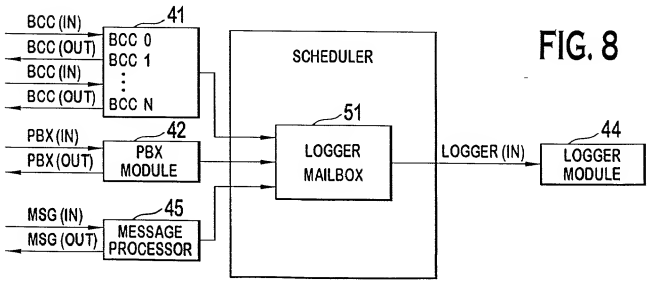


FIG. 8

FIG. 9

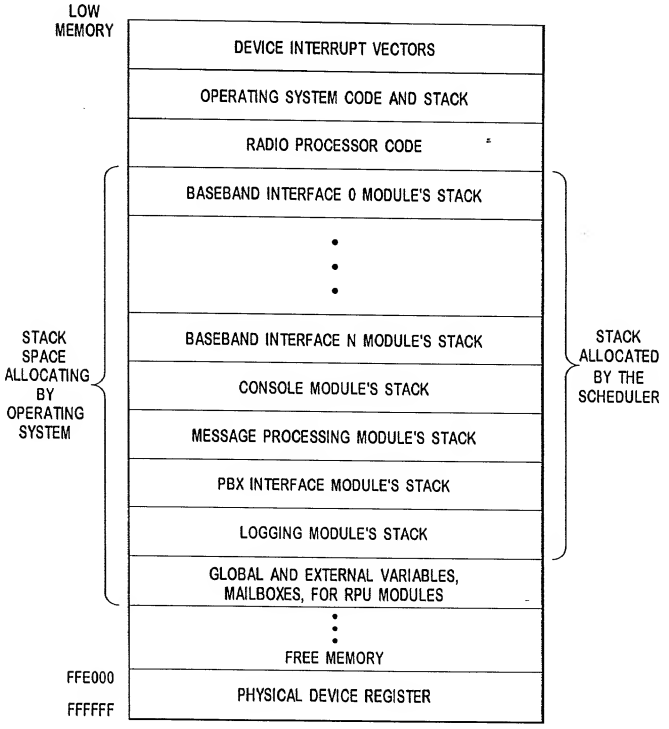
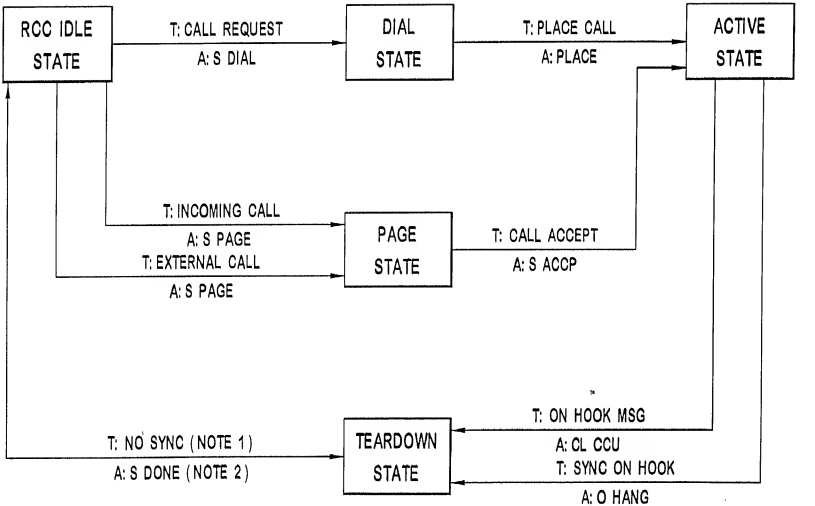

LOW MEMORY
DEVICE INTERRUPT VECTORS
OPERATING SYSTEM CODE AND STACK
RADIO PROCESSOR CODE
BASEBAND INTERFACE 0 MODULE'S STACK
BASEBAND INTERFACE N MODULE'S STACK
CONSOLE MODULE'S STACK
MESSAGE PROCESSING MODULE'S STACK
PBX INTERFACE MODULE'S STACK
LOGGING MODULE'S STACK
GLOBAL AND EXTERNAL VARIABLES, MAILBOXES, FOR RPU MODULES
FREE MEMORY
PHYSICAL DEVICE REGISTER
FFE000
FFFFFF
STACK SPACE ALLOCATING BY OPERATING SYSTEM
STACK ALLOCATED BY THE SCHEDULER

FIG. 10


RCC IDLE STATE
T: CALL REQUEST
A: S DIAL
DIAL STATE
T: PLACE CALL
A: PLACE
ACTIVE STATE
T: INCOMING CALL
A: S PAGE
T: EXTERNAL CALL
A: S PAGE
PAGE STATE
T: CALL ACCEPT
A: S ACCP
T: ON HOOK MSG
A: CL CCU
T: NO SYNC (NOTE 1)
A: S DONE (NOTE 2)
TEARDOWN STATE
T: SYNC ON HOOK
A: O HANG

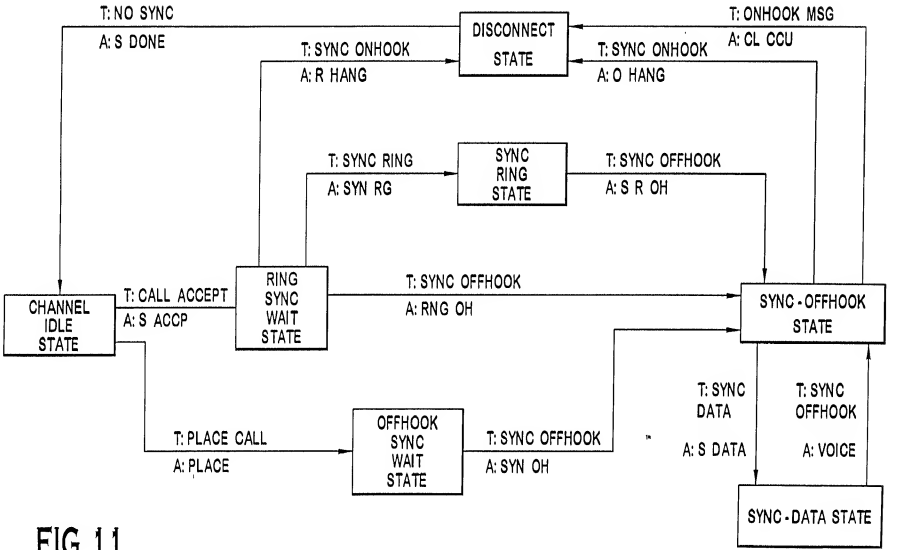
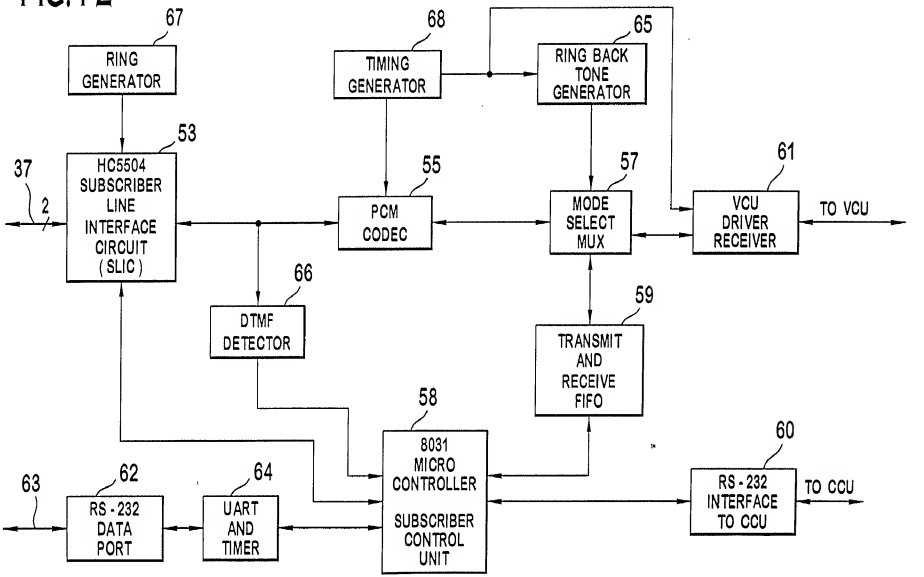

T: NO SYNC
A: S DONE
DISCONNECT STATE
T: ONHOOK MSG
A: CL CCU
T: SYNC ONHOOK
A: R HANG
T: SYNC ONHOOK
A: O HANG
T: SYNC RING
A: SYN RG
SYNC RING STATE
T: SYNC OFFHOOK
A: S R OH
CHANNEL IDLE STATE
T: CALL ACCEPT
A: S ACCP
RING SYNC WAIT STATE
T: SYNC OFFHOOK
A: RNG OH
SYNC - OFFHOOK STATE
T: SYNC DATA
A: S DATA
T: SYNC OFFHOOK
A: VOICE
T: PLACE CALL
A: PLACE
OFFHOOK SYNC WAIT STATE
T: SYNC OFFHOOK
A: SYN OH
SYNC - DATA STATE

FIG. 11

FIG. 12


67
RING GENERATOR
68
TIMING GENERATOR
65
RING BACK TONE GENERATOR
53
37
2
HC5504 SUBSCRIBER LINE INTERFACE CIRCUIT (SLIC)
55
PCM CODEC
57
MODE SELECT MUX
61
VCU DRIVER RECEIVER
TO VCU
66
DTMF DETECTOR
59
TRANSMIT AND RECEIVE FIFO
58
8031 MICRO CONTROLLER
SUBSCRIBER CONTROL UNIT
60
63
62
RS-232 DATA PORT
64
UART AND TIMER
RS-232 INTERFACE TO CCU
TO CCU

PURSUANT TO 37 CFR 1.56(c)

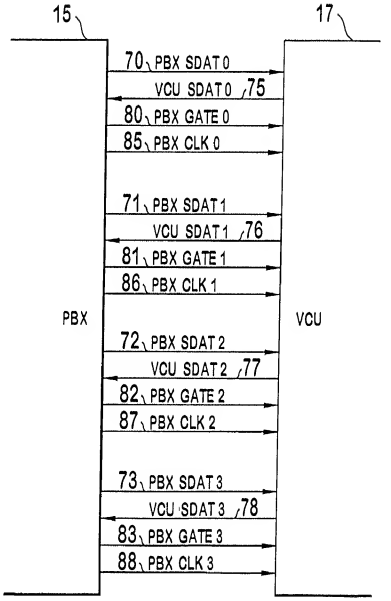


FIG. 13

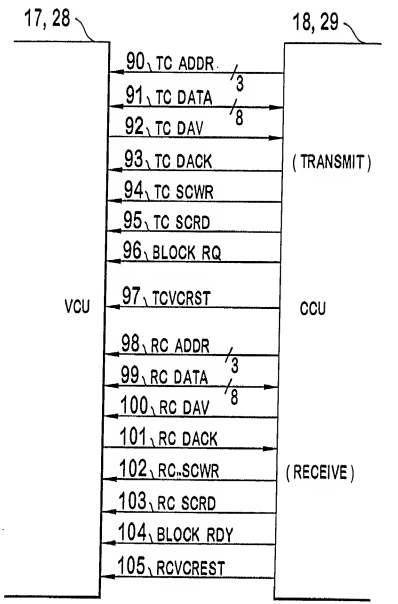


FIG. 16

FIG. 14

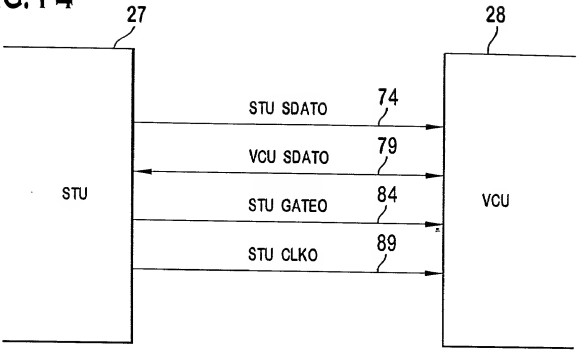

27
28
STU SDATO
74
VCU SDATO
79
STU
VCU
STU GATEO
84
STU CLKO
89

FIG. 21

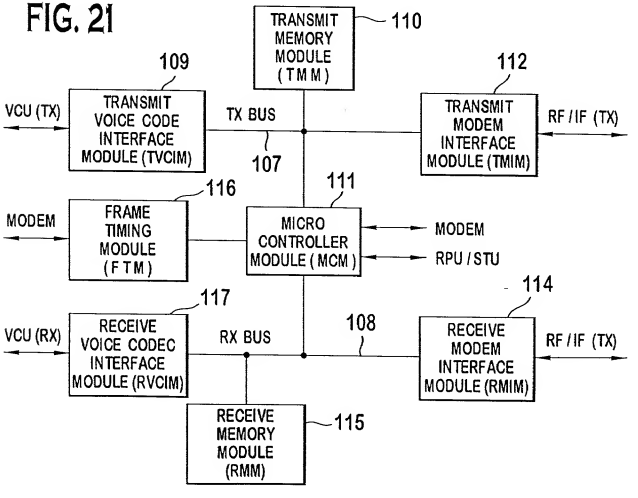

TRANSMIT MEMORY MODULE (TMM)
110
109
112
VCU (TX)
TRANSMIT VOICE CODE INTERFACE MODULE (TVCIM)
TX BUS
107
TRANSMIT MODEM INTERFACE MODULE (TMIM)
RF / IF (TX)
116
111
MODEM
FRAME TIMING MODULE (FTM)
MICRO CONTROLLER MODULE (MCM)
MODEM
RPU / STU
114
117
VCU (RX)
RECEIVE VOICE CODEC INTERFACE MODULE (RVCIM)
RX BUS
108
RECEIVE MODEM INTERFACE MODULE (RMIM)
RF / IF (TX)
RECEIVE MEMORY MODULE (RMM)
115

FIG. 15

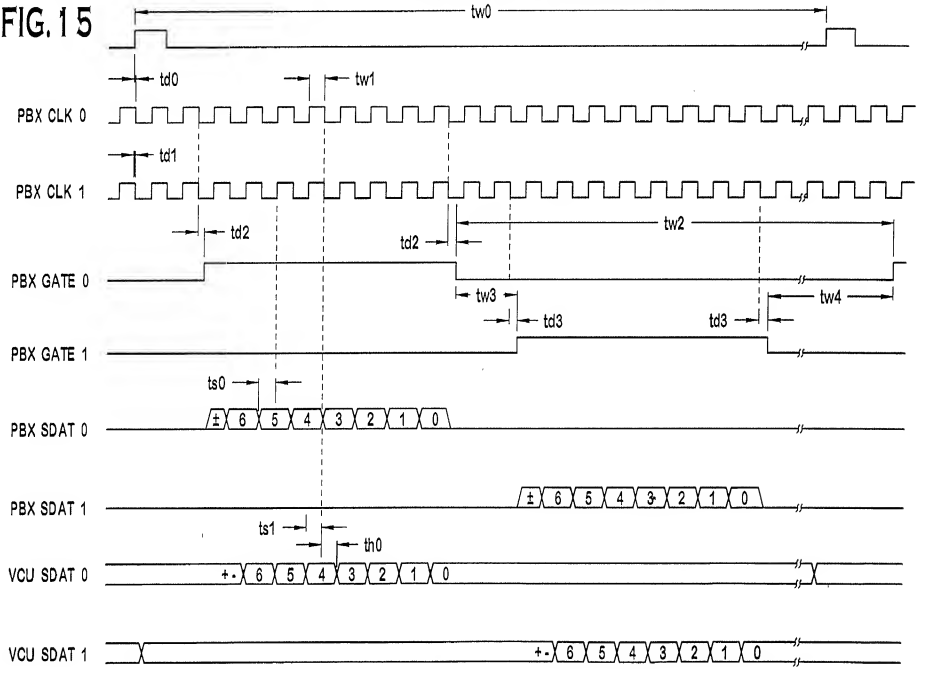

tw0
td0
tw1
PBX CLK 0
td1
PBX CLK 1
td2
td2
tw2
PBX GATE 0
tw3
td3
td3
tw4
PBX GATE 1
ts0
PBX SDAT 0
± 6 5 4 3 2 1 0
PBX SDAT 1
± 6 5 4 3 2 1 0
ts1
th0
VCU SDAT 0
+ - 6 5 4 3 2 1 0
VCU SDAT 1
+ - 6 5 4 3 2 1 0

FIG. 17

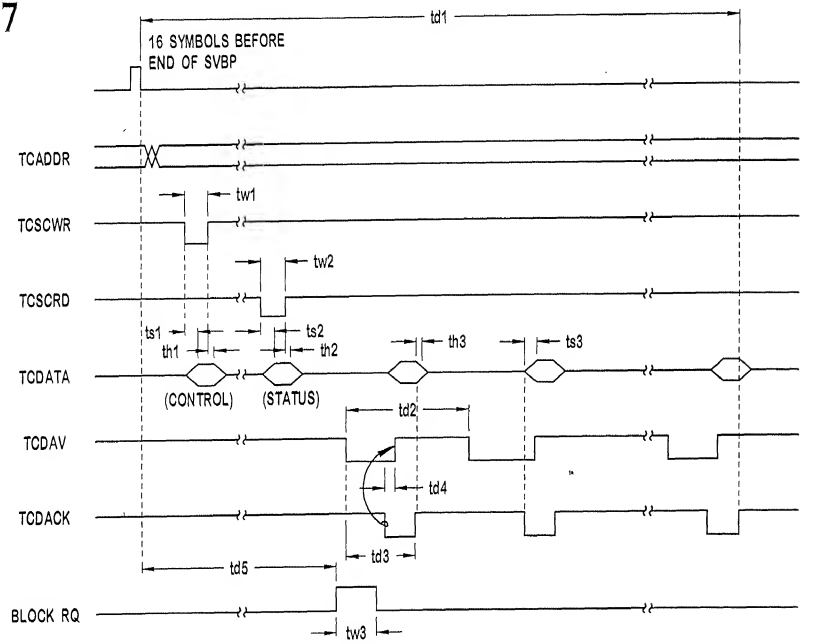
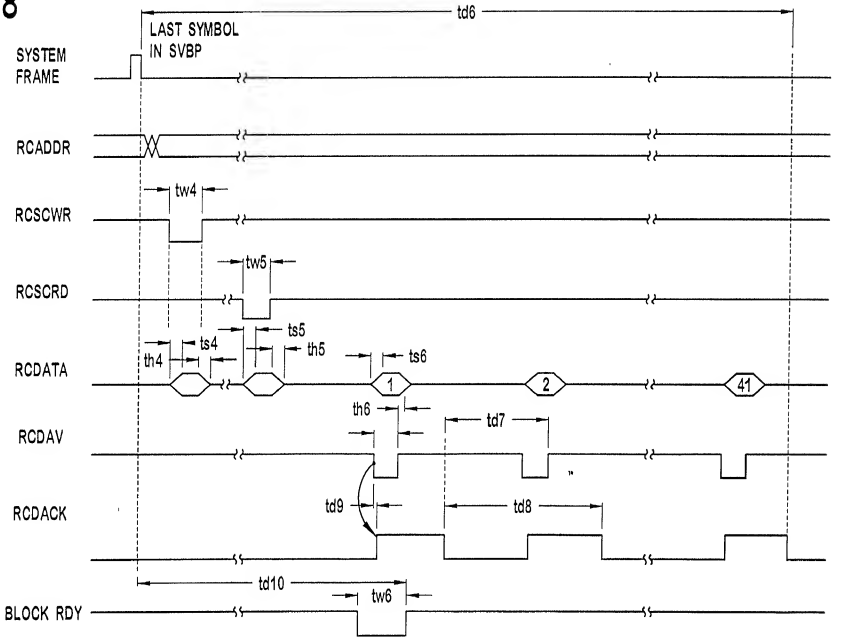

td1
16 SYMBOLS BEFORE
END OF SVBP
TCADDR
tw1
TCSCWR
tw2
TCSCRD
ts1
th1
ts2
th2
th3
ts3
TCDATA
(CONTROL)
(STATUS)
td2
TCDAV
td4
TCDACK
td5
td3
BLOCK RQ
tw3

FIG. 18


td6
LAST SYMBOL
IN SVBP
SYSTEM
FRAME
RCADDR
tw4
RCSCWR
tw5
RCSCRD
ts5
ts4
th4
th5
ts6
RCDATA
1
2
41
th6
td7
RCDAV
td9
td8
RCDACK
td10
tw6
BLOCK RDY

5,090,050 2/25/92

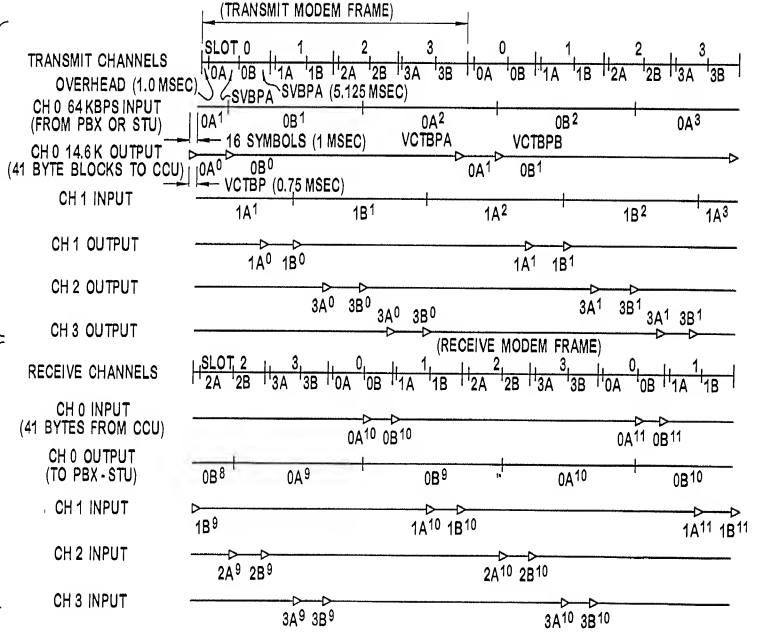


FIG. 19A

FIG. 19B

FIG. 20A

RECEIVE CHANNELS

CH 2 INPUT 14.6 KBPS
(41 BYTE BLOCK FROM CCU)

CH 2 OUTPUT 64 KBPS
(TO PBX)

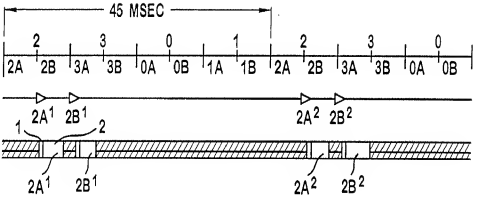


FIG. 20B

TRANSMIT CHANNELS

CH 2 INPUT 64 KBPS
(FROM PBX)

CH 2 OUTPUT 14.6 KBPS
(41 BYTE BLOCK TO CCU)

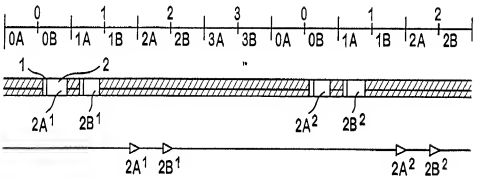


FIG. 22

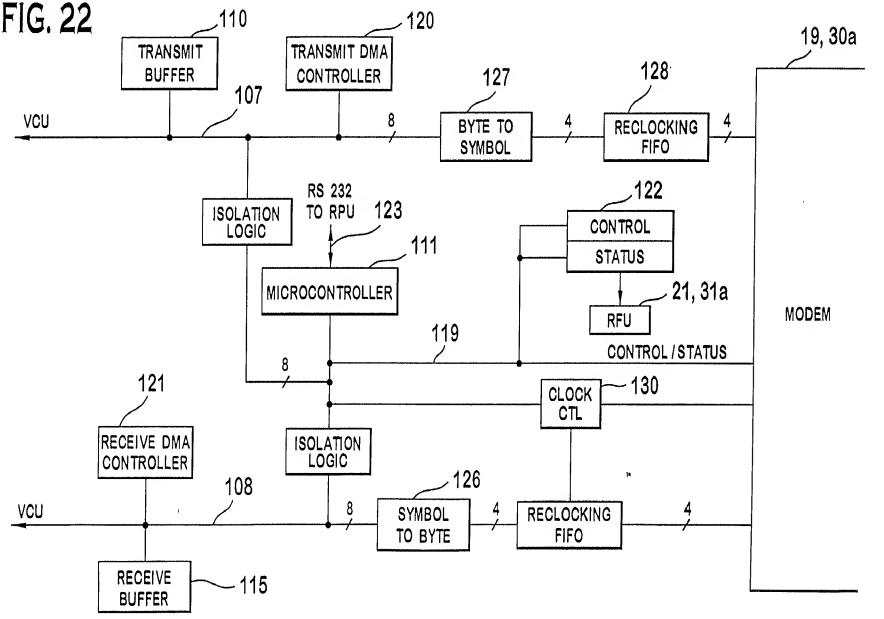

110
TRANSMIT BUFFER
120
TRANSMIT DMA CONTROLLER
19, 30a
127
128
107
VCU
8
BYTE TO SYMBOL
4
RECLOCKING FIFO
4
ISOLATION LOGIC
RS 232 TO RPU
123
122
CONTROL
STATUS
111
MICROCONTROLLER
21, 31a
RFU
MODEM
119
CONTROL / STATUS
8
121
CLOCK CTL
130
RECEIVE DMA CONTROLLER
ISOLATION LOGIC
126
108
VCU
8
SYMBOL TO BYTE
4
RECLOCKING FIFO
4
RECEIVE BUFFER
115

FIG. 23

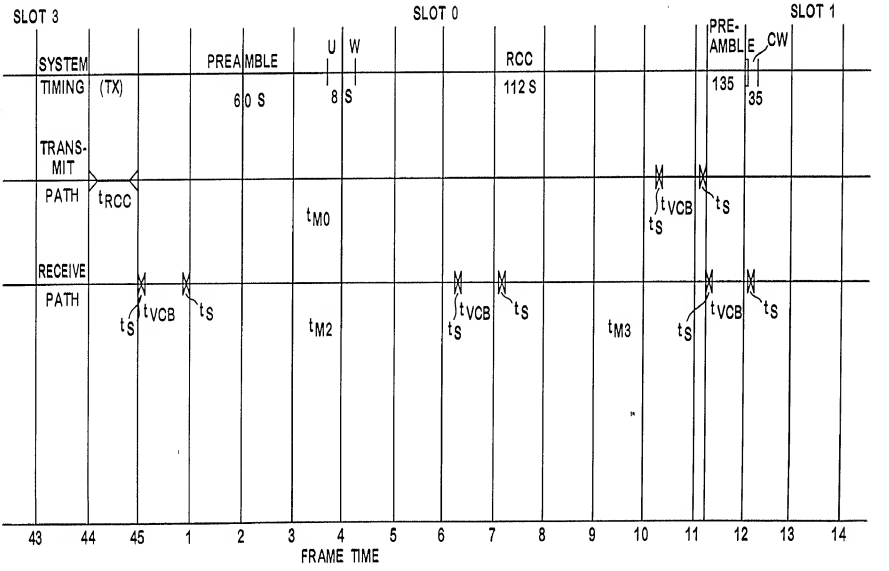
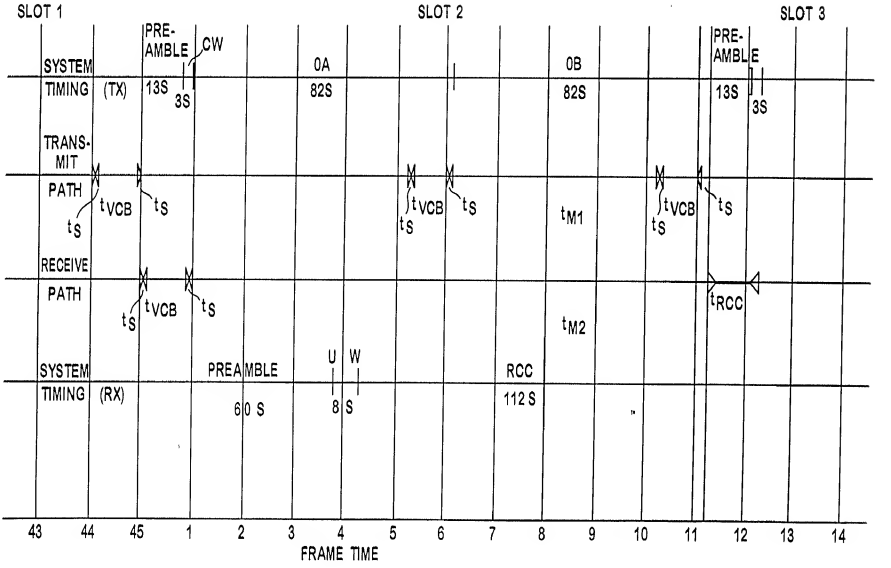

SLOT 3
SLOT 0
SLOT 1
SYSTEM TIMING (TX)
TRANS-MIT PATH
RECEIVE PATH
PREAMBLE
60 S
U
W
8 S
RCC
112 S
PRE-AMBLE
CW
135
35
tRCC
tM0
tM2
tM3
tVCB
tS
43
44
45
1
2
3
4
5
6
7
8
9
10
11
12
13
14
FRAME TIME

FIG. 24


SLOT 1
SLOT 2
SLOT 3
SYSTEM TIMING (TX)
PRE-AMBLE
CW
13S
3S
0A
82S
0B
82S
PRE-AMBLE
13S
3S
TRANS-MIT PATH
t_S
t_{VCB}
t_S
t_M1
RECEIVE PATH
t_S
t_{VCB}
t_S
t_M2
t_{RCC}
SYSTEM TIMING (RX)
PREAMBLE
60 S
U
W
8 S
RCC
112 S
43
44
45
1
2
3
4
5
6
7
8
9
10
11
12
13
14
FRAME TIME

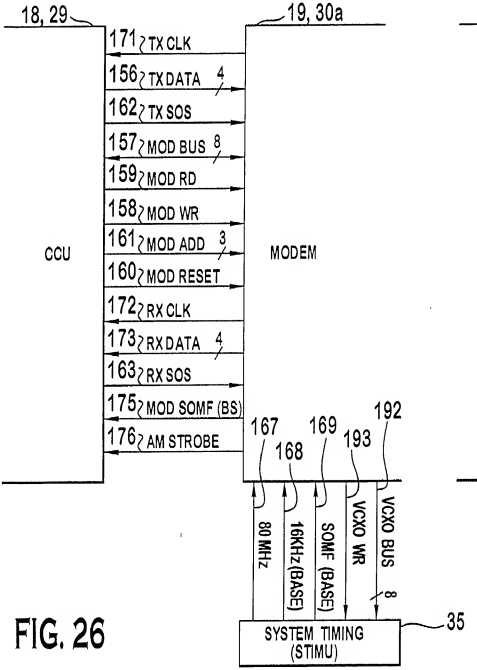

18, 29
CCU
19, 30a
MODEM
171 TX CLK
156 TX DATA 4
162 TX SOS
157 MOD BUS 8
159 MOD RD
158 MOD WR
161 MOD ADD 3
160 MOD RESET
172 RX CLK
173 RX DATA 4
163 RX SOS
175 MOD SOMF (BS)
176 AM STROBE
167
168
169
193
192
80 MHz
16KHz (BASE)
SOMF (BASE)
VCXO WR
VCXO BUS 8
SYSTEM TIMING (STIMU)
35

FIG. 26

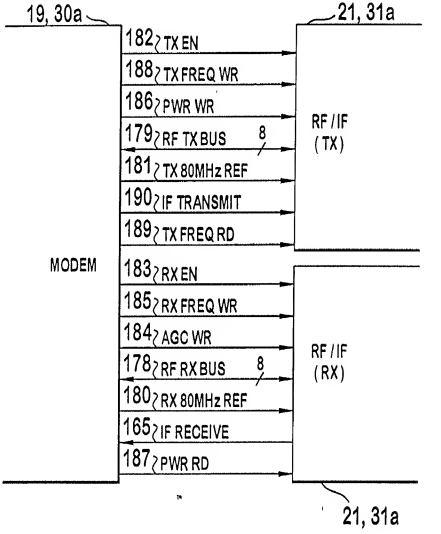

19, 30a
MODEM
21, 31a
182 TX EN
188 TX FREQ WR
186 PWR WR
179 RF TX BUS 8
181 TX 80MHz REF
190 IF TRANSMIT
189 TX FREQ RD
RF / IF (TX)
183 RX EN
185 RX FREQ WR
184 AGC WR
178 RF RX BUS 8
180 RX 80MHz REF
165 IF RECEIVE
187 PWR RD
RF / IF (RX)
21, 31a

FIG. 27

SUBSTITUTE SHEET (RULE 26)

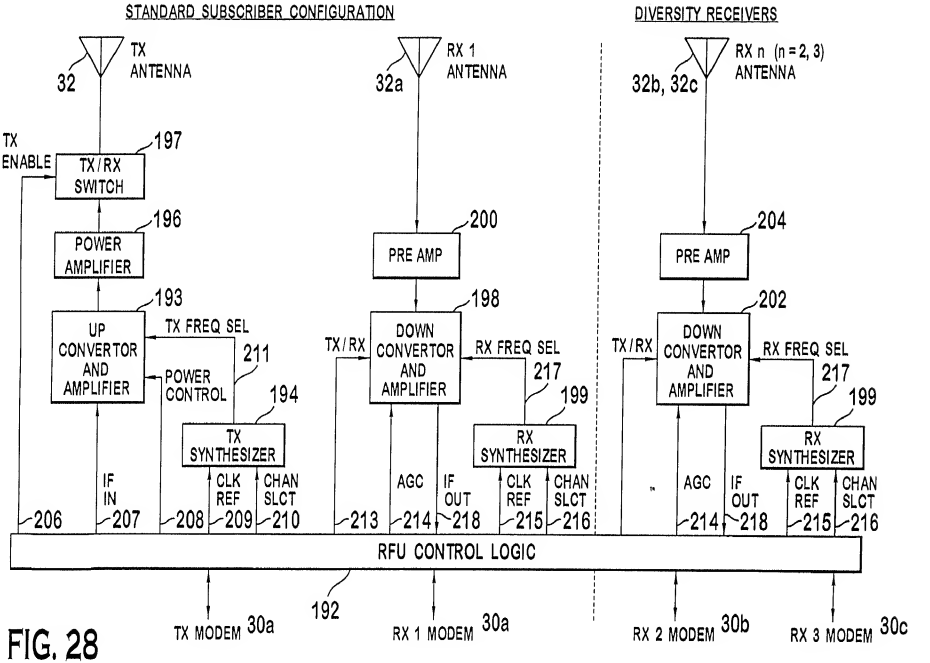


FIG. 28

Redacted - Exempt

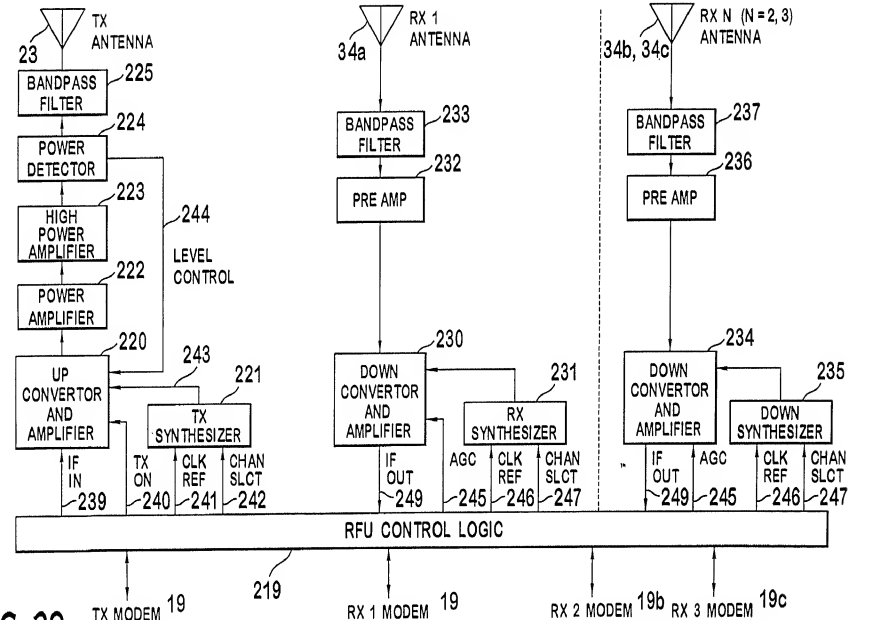


FIG. 29